In the United States Court of Federal Claims

OFFICE OF SPECIAL MASTERS

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ALYSSA SALERNO,	*	
	*	No. 16-1280V
Petitioner,	*	Special Master Christian J. Moran
	*	
v.	*	Filed: May 29, 2020
	*	
SECRETARY OF HEALTH AND HUMAN SERVICES,	*	Entitlement, influenza vaccine, HPV vaccine, chronic migraine
	*	
Respondent.	*	
* *		

Michael London, Virginia Anello, Douglas & London, P.C., New York, NY, for petitioner;
Robert Coleman, III, United States Dep't of Justice, Washington, DC, for respondent.

DECISION DENYING COMPENSATION[1]

Before receiving an influenza ("flu") and human papillomavirus ("HPV") vaccinations on November 12, 2013, Alyssa Salerno, the petitioner, had a history of headaches. Ms. Salerno alleges that the flu and HPV vaccinations caused her to develop a chronic migraine, which lasted for approximately nine months following the vaccinations. In the alternative, Ms. Salerno alleges that these vaccinations significantly aggravated her preexisting headaches. The Secretary of Health and Human Services, the respondent, disputes these claims.

A series of reports were obtained to help resolve the disputed medical issues. Ms. Salerno retained Hal Gutstein, M.D., a neurologist, whose reports are exhibits 17 and 50. The Secretary retained Peter M. Bingham, M.D., a pediatric

[1] The E-Government Act, 44 U.S.C. § 3501 note (2012) (Federal Management and Promotion of Electronic Government Services), requires that the Court post this decision on its website. This posting will make the decision available to anyone with the internet. Pursuant to Vaccine Rule 18(b), the parties have 14 days to file a motion proposing redaction of medical information or other information described in 42 U.S.C. § 300aa-12(d)(4). Any redactions ordered by the special master will appear in the document posted on the website.

neurologist, whose reports are exhibits A and N. After the parties completed their development of evidence through the presentation of expert reports, the parties were ordered to submit briefs before any potential adjudication. See Order, issued April 11, 2019.

Ms. Salerno has requested a hearing during which she, her mother, and the two experts would testify. However, petitioners are not guaranteed a hearing. The Vaccine Act gives special masters the discretion to decide whether an evidentiary hearing will be held. 42 U.S.C. § 300aa-12(d)(3)(B)(v) (promulgated as Vaccine Rule 8(c) & (d)), which was affirmed by the Federal Circuit in Kreizenbeck v. Sec'y of Health & Human Servs., 945 F.3d 1362, 1365 (Fed. Cir. 2020). In this case, a resolution based on the papers is appropriate. However, the record does not support Ms. Salerno's claim for entitlement. The main reason is that Ms. Salerno is advancing a theory (autoimmune syndrome induced by adjuvants) that special masters have consistently rejected.

I. Procedural History

Ms. Salerno began this claim by filing a petition on October 6, 2016, which alleged that she sustained an off-table injury as a result of the flu and HPV vaccines administered on November 12, 2013. Ms. Salerno represented that the petition was filed shortly before the statute of limitations to preserve her rights. Over the following months, Ms. Salerno filed an affidavit as well as medical and educational records to support her claim.

A status conference was held on May 26, 2017. At that time, petitioner confirmed that she was collecting additional medical records and would thereafter file an amended petition. See Order, issued May 26, 2017. Ms. Salerno filed an amended petition on July 26, 2017. In it, Ms. Salerno alleged that, as a result of the flu and HPV vaccines administered on November 12, 2013, she suffered from chronic headaches. In the alternative, Ms. Salerno alleged that those vaccinations significantly aggravated her preexisting headaches.

The Secretary filed his report, pursuant to Vaccine Rule 4, on October 19, 2017. Resp't's Rep. The Secretary provided a detailed overview of Ms. Salerno's medical history. Id. at 2-8. With respect to entitlement, the Secretary recommended that compensation be denied. The Secretary argued that Ms. Salerno had not established a causation-in-fact claim because she had not provided a medical theory, expert report, or scientific literature causally linking the flu or HPV vaccination to her alleged injury. Id. at 9. The Secretary asserted that none of Ms. Salerno's medical providers had opined that these vaccinations had caused

her alleged injury. Id. Regarding Ms. Salerno's significant aggravation claim, the Secretary contended that Ms. Salerno had not provided evidence of "a medical theory causally connecting such a significantly worsened condition to the vaccination, [or] a logical sequence of cause and effect showing that the vaccination was the reason for the significant aggravation," or that her "current condition constitutes a 'significant aggravation' of the [her] condition prior to vaccination." Id. at 10.

In the ensuing status conference, the parties discussed the possibility of settlement and the next steps absent a settlement agreement. See Order, issued Nov. 2, 2017. The undersigned suggested the use of expert reports to help determine whether Ms. Salerno is entitled to compensation. Id. To facilitate the process of obtaining useful reports from experts, the undersigned issued a proposed set of instructions for the expert reports. Id. After not receiving any comments, the undersigned made those proposed instructions final. See Order, issued Dec. 14, 2017.

Ms. Salerno filed a report from Dr. Gutstein on March 30, 2018. Exhibit 17. As discussed below, Dr. Gutstein opined that the chronic migraine headaches that Ms. Salerno suffered for approximately nine months were caused by the flu and/or HPV vaccines that she received on November 12, 2013. See id. Dr. Gutstein based his opinion on, among other things, the theory of autoimmune syndrome induced by adjuvants ("ASIA"). Id. Ms. Salerno also submitted Dr. Gutstein's curriculum vitae and the articles cited in his report. Exhibits 18-45.

To discuss Dr. Gutstein's report, a status conference was held on April 11, 2018. The undersigned informed petitioner that special masters had rejected the ASIA theory of vaccine causation. See Order, issued Apr. 11, 2018. To provide insight into some of the challenges an ASIA theory of causation might encounter, the undersigned cited two published cases from 2014.[2] Id. The undersigned also noted that Dr. Gutstein had linked immune dysregulation to migraines through Calcitonin Gene-related Peptide ("CGRP") and cited Todd Rozen and Sahar Swidan, *Elevation of CSF Tumor Necrosis Factor α Levels in New Daily Persistent Headache and Treatment Refractory Chronic Migraine*, 47 Headache 1050 (2007). Id. Petitioner was informed that the CGRP theory and the article cited by Dr.

[2] These cases were D'Angiolini v. Sec'y of Health & Human Servs., No. 99-578V, 2014 WL 1678145 (Fed. Cl. Spec. Mstr. Mar. 27, 2014), mot. for rev. denied, 122 Fed. Cl. 86 (2015), aff'd without op., 645 F. App'x 1002 (Fed. Cir. 2016), and Harris v. Sec'y of Health & Human Servs., No. 10-322V, 2014 WL 3159377 (Fed. Cl. Spec. Mstr. June 10, 2014), mot. for rev. denied, slip op. (Fed. Cl. June 10, 2014).

Gutstein had played a central role in a published 2015 decision, in which the undersigned denied compensation. Id. In the prior case, the undersigned noted that Ms. Swidan, a pharmacist, had been retained as an expert and that her testimony was unimpressive. Id. The undersigned stated that the testimony ultimately discredited both her opinion as well as the weight afforded the Rozen and Swidan article more generally. Id.

In response to Dr. Gutstein, the Secretary filed a report from Dr. Peter Bingham. Exhibit A. In his report, Dr. Bingham opined that the flu and HPV vaccinations received on November 12, 2013, did not cause or exacerbate Ms. Salerno's headaches. See id. at 7. Dr. Bingham cited alternative factors that could have contributed to Ms. Salerno's post-vaccination condition, including obesity, seasonal change, polycystic ovarian syndrome, intercurrent infection, and low vitamin D levels. Id. at 4. Dr. Bingham additionally stated that the ASIA theory of causation was not valid. Id. at 7.

Ms. Salerno filed a responsive expert report from Dr. Gutstein on December 16, 2018. Exhibit 50. Dr. Gutstein replied that several of the alternative medical factors identified by Dr. Bingham were not present in Ms. Salerno's medical history or lacked evidence to demonstrate they could cause Ms. Salerno's transformed migraine. See id. at 3-6. Dr. Gutstein did acknowledge that some of the factors have been linked to migraines. Id. at 4. However, Dr. Gutstein stated that this was not evidence of causation. Id. Rather, such linkage "simply left [Ms. Salerno] predisposed or at a higher risk for transformation." Id. Dr. Gutstein otherwise noted that Dr. Bingham had not presented evidence to establish that the ASIA theory of causation was unreliable or had not gained acceptance in the medical community. Id. at 6-7.

In the next status conference, the Secretary indicated that Dr. Bingham would likely respond to the recently-filed report from Dr. Gutstein. Otherwise, the parties agreed that the evidentiary record was largely complete. See Order, issued Dec. 21, 2018 The undersigned noted that, if the parties were unable to resolve the case informally, they would be ordered to submit opposing briefs for a ruling on the record. Id. Following the submission of briefs and additional evidence, the undersigned would make a finding regarding Ms. Salerno's entitlement to compensation or schedule a hearing to obtain additional evidence. Id. Petitioner was advised that the Vaccine Act does not provide petitioners an evidentiary hearing as a matter of right. Id. The Secretary filed a response from Dr. Bingham on February 4, 2019. Exhibit N.

An Order was issued on April 11, 2019, in which the undersigned provided guidance regarding the content expected in the parties' briefs. See Order, issued Apr. 11, 2019. Ms. Salerno filed a brief in support of entitlement on July 5, 2019, and requested that she be afforded an opportunity to reply to any response filed by the Secretary. The Secretary filed a brief opposing compensation on August 22, 2019.

The undersigned issued an Order on December 12, 2019, authorizing Ms. Salerno to file a reply brief. See Order, issued Dec. 12, 2019. In the Order, the undersigned noted that Ms. Salerno's initial brief stated that Dr. Gutstein had offered "two medical theories." Id. One of these theories was the ASIA theory—i.e., the adjuvants in the vaccines caused the production of CGRP, which led to migraines. Id. The undersigned observed that the second theory was unclear, but may have been that the vaccination caused "neuroinflammation and autoimmune reaction." Id. To support this second potential theory, Ms. Salerno had cited Inbar, et al., *Behavioral abnormalities in young female mice following administration of aluminum adjuvants and the human papillomavirus (HPV) vaccine Gardasil*. Id. Ms. Salerno was advised that, through work on other cases, the undersigned was aware that the journal that originally published the Inbar article had retracted it. Id. Ms. Salerno was directed to identify the "second" theory in her reply brief and state whether she would continue to advance the neuroinflammation theory. Id.

Ms. Salerno filed a reply brief on March 2, 2020. With the filing of Ms. Salerno's reply, the case is ready for adjudication.[3]

II. Medical History

A. Health Before Vaccination

Ms. Salerno was born in 1998. Exhibit 7 at 1. Around February 2002, Ms. Salerno began receiving primary care treatment for sinusitis, intermittent viral illnesses, and strep throat. See generally exhibit 16. Ms. Salerno first reported headaches (along with stomach ache and sore throat) during a primary care appointment with Dr. Traci Toll-Griffin on December 17, 2004. Id. at 26.

From 2005 through November 2009, Ms. Salerno continued to be treated by Dr. Toll-Griffin for sinusitis and viral illness with associated complaints of

[3] This decision refers to the most relevant pleadings as "Pet'r's Brief," "Resp't's Brief," and "Pet'r's Reply."

intermittent headache, nausea, sore throat, and stomach ache. Id. at 30, 34-35, 43, 47, 51, 55. During this period, on May 13, 2008, Ms. Salerno reported a three-day history of headaches with no other complaints—the first instance in which Ms. Salerno's complaint of headache was not accompanied by other symptoms. Id. at 56.

On November 16, 2009, Ms. Salerno reported a 10-day history of headaches with occasional sore throat and stomach ache. Id. at 84. She described her headache as being painful in the cheeks and forehead. Id. Dr. Toll-Griffin diagnosed Ms. Salerno with "Headache/possible sinusitis" and discussed headache management. Id. During an annual physical with Dr. Toll-Griffin one year later, Ms. Salerno reported "occasional headaches" but indicated they were not affecting her school work, sleep, or social life. Id. at 85.

Ms. Salerno thereafter presented to Dr. Toll-Griffin on March 2, 2011, with a two-month history of headaches. Id. at 88. On this occasion, Ms. Salerno noted that she was also experiencing dizziness upon standing for two weeks. Id. Dr. Toll-Griffin diagnosed Ms. Salerno with headache and vasovagal syncope, possibly related to allergies. Id.

The following month, Ms. Salerno underwent an initial evaluation with Dr. Tanya-Marie Sweeney, a neurologist. Exhibit 11 at 1. Ms. Salerno again reported a two-month history of headaches; however, she indicated that her headaches had become daily in nature. Id. Ms. Salerno described them as being frontally or posteriorly located with some throbbing, nausea, and vomiting. Id. Dr. Sweeney's impression was "12-year old with persistent daily headache." Id. at 2.

Ms. Salerno had four follow-up appointments with Dr. Sweeney through September 29, 2011. Id. at 3, 5-7. At her appointment on September 29, 2011, Ms. Salerno reported that she had experienced improvement of her symptoms with nortriptyline and was not currently having any headaches. Id. at 6. Dr. Sweeney advised Ms. Salerno that she would be weaned off nortriptyline in one month if she continued to be symptom-free. Id.

Ms. Salerno was next seen by Dr. Sweeney approximately eleven months later on August 31, 2012. Id. at 9. Dr. Sweeney recorded that Ms. Salerno had experienced headaches every other day around May 2012, which lasted about four or five weeks. Id. Dr. Sweeney noted that Ms. Salerno had re-started nortriptyline during this period but was forgetful about taking it. Id. However, Ms. Salerno discontinued taking nortriptyline in June 2012 and had not experienced headaches during the ensuing months. Id. Dr. Sweeney's impression was "teen with history

of headaches, most likely triggered by stress and poor lifestyle choices at the time of stress." Id.

Approximately five months later, on February 7, 2013, Ms. Salerno returned to Dr. Sweeney. Id at 10. Ms. Salerno reported doing "fairly well" but indicated her headaches had returned over the last month. Id. She added that her headaches tended to occur during school and would last most of the day. Id. Dr. Sweeney counseled Ms. Salerno regarding lifestyle changes and the use of supplements. Id. Dr. Sweeney also advised that blood work would be obtained to assess Ms. Salerno's vitamin D levels, which were low the previous June, to ensure that there was "not something systemic causing her to have a reoccurrence of her frequent headaches." Id.

The next month, on March 1, 2013, Ms. Salerno returned to Dr. Sweeney reporting that her headaches were increasing in frequency, waking her up at night, and involving her whole head. Id. at 11. Ms. Salerno noted that it "feels like her head is going to explode." Id. Dr. Sweeney included an impression of "chronic headaches" and advised Ms. Salerno to re-start nortriptyline. Id.

Thereafter, Ms. Salerno was seen for a primary care appointment on May 21, 2013, with Dr. Toll-Griffin. Exhibit 4 at 23. At that time, Ms. Salerno reported that the nortriptyline had improved her headaches. Id. She stated that she had otherwise experienced irregular periods for the past three months as well as weight gain. Id. Dr. Toll-Griffin recommended lab work and provided an endocrine referral if the symptoms persisted. Id. Ms. Salerno's vitamin D level was recorded as 27.6 on May 22, 2013. Id. at 54.

On September 18, 2013, Ms. Salerno underwent an initial evaluation with Dr. Jaime Tsay, an endocrinologist. Exhibit 12 at 1. Ms. Salerno reported significant weight gain over the preceding years and irregular periods over the past year. Id. Her weight was listed as 173.5 pounds. Id. Dr. Tsay indicated that this weight placed Ms. Salerno within the 95th percentile. Id. Ms. Salerno's body mass index ("BMI") was noted to be in the 97th percentile. Id. Dr. Tsay observed that Ms. Salerno's recent lab results reflected elevated testosterone levels. Id. at 2. Dr. Tsay stated that Ms. Salerno's irregular periods and testosterone levels could "be consistent with [polycystic ovarian syndrome]." Id. Dr. Tsay ordered additional lab work and counseled Ms. Salerno regarding lifestyle changes. Id.

The following month, Ms. Salerno was seen for a primary care appointment with Dr. Toll-Griffin. Exhibit 4 at 22. Ms. Salerno was noted to have previously

had a "lump in her armpit" that improved after a course of Augmentin. Id. The impression was "Resolved lymphadenopathy." Id.

At an annual physical with Dr. Toll-Griffin on November 12, 2013, Ms. Salerno was administered the flu and HPV vaccinations alleged as causal in this case. Id. at 21.

B. Health After Vaccination

Nine days following the vaccination, on November 21, 2013, Ms. Salerno was seen for a follow-up appointment with Dr. Sweeney reporting a six-day history of headaches. Exhibit 11 at 12. She described her headaches as occurring over her whole head with associated pounding, dizziness, and some phonophobia. Id. Ms. Salerno noted that she had otherwise "not really had any significant headaches lately." Id. Dr. Sweeney assessed Ms. Salerno with "protracted headache/migraine" and prescribed ketorolac as well as Fioricet. Id.

Four days later, Ms. Salerno presented to the emergency room at Putnam Hospital Center complaining of an 11-day history of constant headache. Exhibit 8 at 83. She described her headaches as a stabbing and throbbing pressure over the entire head and stated that the medications prescribed by Dr. Sweeney had provided only temporary relief. Id. At the hospital, she was diagnosed with "Migraine headache" and discharged the same day in improved condition. Id. at 85.

The next day, however, Ms. Salerno returned to Putnam Hospital Center reporting severe headache symptoms. Id. at 11. The hospital physician noted that the previous day's regimen of Toradol, Reglan, Benadryl, and IV fluids did not provide the same relief, and Ms. Salerno was transferred to the pediatric emergency medicine division at Westchester Medical Center. Id. at 16.

Ms. Salerno was treated at the Westchester Medical Center through November 28, 2013. Exhibit 9 at 8. On that date, Ms. Salerno was discharged to home in stable condition with a prescription for amitriptyline. Id. at 9.

Less than a week later, on December 2, 2013, Ms. Salerno had a follow-up appointment with Dr. Sweeney. Exhibit 11 at 13. Ms. Salerno reported continuing headaches that were located throughout the head with aches and neck pain. Id. She stated that her symptoms had prevented her from going to school that day. Id. Dr. Sweeney assessed Ms. Salerno with "new persistent daily headache" and prescribed nortriptyline, naproxen, Flexeril, and klonopin. Id.

On December 11, 2013, Ms. Salerno underwent an initial evaluation with Dr. Robert Fryer, a pediatric neurologist. Exhibit 1 at 39. Ms. Salerno reported holocephalic headaches for over three weeks with shooting pain and photophobia. Id. at 40. She noted a previous history of migraines but claimed that her current headaches were worse than normal. Id. On physical examination, Ms. Salerno was observed to have right occipital, bitemporal, and bifrontal pressure point tenderness in addition to allodynia. Id. at 42. Dr. Fryer stated that the findings on physical examination supported a diagnosis of transformed migraine. Id. at 43. However, he also noted that the "etiology [of] this headache is multifactorial, [it is] hard to pin this on the vaccinations versus her endocrine issues versus routine stress and dietary issues." Id. Dr. Fryer prescribed Mobic and an increased dosage of nortriptyline. Id.

At a follow-up appointment with Dr. Fryer the next month, Ms. Salerno reported daily headaches but indicated that her symptoms were slightly improved. Id. at 36. Dr. Fryer noted that Ms. Salerno had experienced weight gain on nortriptyline and changed her medication to a combination of doxepin and atenolol. Id. at 38. Dr. Fryer observed that Ms. Salerno would be a "good candidate for Botox and or nerve blocks" and stated that he would find a provider to perform these procedures. Id. Ten days later, on January 18, 2014, Dr. Maria Sangiorgio, a neurologist, administered a bilateral occipital nerve block.[4] Exhibit 10 at 4.

On March 12, 2014, Ms. Salerno had a follow-up appointment with Dr. Tsay, her endocrinologist. Exhibit 12 at 4. Dr. Tsay noted that Ms. Salerno had gained 18 ½ pounds over the last six months and diagnosed her with irregular periods, acne, and obesity. Id. at 4-5.

Ms. Salerno subsequently underwent a follow-up appointment with Dr. Sweeney, her neurologist, on March 17, 2014. Exhibit 11 at 17. Ms. Salerno stated that the injection performed by Dr. Sangiorgio had "really helped with occipital neuralgia," but she still experienced headaches. Id. She described her

[4] At the time of this appointment, Ms. Salerno's weight was listed as 182 pounds. Exhibit 10 at 5. Dr. Sangiorgio recommended that Ms. Salerno undergo physical therapy to complement the bilateral occipital nerve block. Id. at 3. From February 4, 2014, to March 25, 2014, Ms. Salerno underwent approximately nine physical therapy sessions. Exhibit 3 at 5-8. At the February 4, 2014 initial evaluation, Ms. Salerno reported that her headache symptoms had been relieved with medication and the nerve block and rated them as a "2" out of "10." Id. at 5. Ms. Salerno reported that she had experienced these, or similar, headache symptoms approximately two years ago, but they lasted for much less time. Id. at 2.

headaches as being frontal with associated pressure, throbbing, photophobia, phonophobia, and dizziness. Id. Ms. Salerno noted that the intensity of her headaches had decreased with medication and the injection. Id. Dr. Sweeney diagnosed Ms. Salerno with chronic daily migraines and planned to replace her existing prescriptions with Topamax. Id. Dr. Sweeney also provided a letter requesting a Section 504 Individualized Accommodation Plan at Ms. Salerno's school due to the potential for headache-related absences.[5] Id. at 18.

Ms. Salerno continued to report daily headaches affecting her entire head at a follow-up appointment with Dr. Fryer on April 2, 2014. Exhibit 1 at 27-28. Dr. Fryer directed Ms. Salerno to take doxepin and Topamax and again noted that she would be a good candidate for Botox or nerve blocks. Id. at 30. Later that month, on April 28, 2014, Dr. Sangiorgio administered a Botox injection. Exhibit 10 at 24.

Ms. Salerno reported that the Botox had not yet provided much improvement at an appointment with Dr. Sweeney on May 13, 2014. Exhibit 11 at 20. She indicated that the typical intensity of her daily headaches was about "3" out of "10." Id. Ms. Salerno stated that she was receiving tutoring and was trying to go back to school. Id. Dr. Sweeney increased her dosage of Topamax. Id.

At a follow-up appointment with Dr. Fryer later that month, on May 21, 2014, Ms. Salerno reported that she continued to experience daily headaches throughout her head. Exhibit 1 at 22. Nevertheless, Dr. Fryer noted a slight improvement of her initial presentation. Id. Ms. Salerno indicated that she was now back in school but recently had some headache-associated absences. Id. Dr. Fryer recommended no changes in treatment. Id. at 23.

On June 4, 2014, Ms. Salerno had an appointment with Dr. Adina Keller, a gynecologist, to discuss possible PCOS. Exhibit 2 at 1. Ms. Salerno reported irregular and heavier periods, acne, and weight gain. Id. Dr. Keller recorded that Ms. Salerno's periods became irregular around the time that she received the flu and HPV vaccinations. Id. Dr. Keller ordered a pelvic ultrasound. Id.

Ms. Salerno underwent a pelvic ultrasound on June 17, 2014, which revealed a large septated cystic left adenal region. Id. at 3. An MRI of the pelvis was completed three days later, revealing a "[l]arge 15 cm complex left adnexal cystic/solid mass, consistent with cystic teratoma," in addition to a "[m]ildly

[5] Ms. Salerno was approved for a Section 504 Individualized Accommodation Plan on March 28, 2014. Exhibit 5 at 1.

enlarged right ovary containing multiple small peripheral follicles, suggesting polycystic ovaries." Id. at 5.

After consulting with Dr. Keller, Ms. Salerno opted to undergo a laparoscopic left ovarian cystectomy, which was completed on July 9, 2014. Exhibits 2 at 6-7; 14 at 11. At an appointment on July 14, 2014, Dr. Keller noted some post-operative complications but recorded that Ms. Salerno was currently feeling "much better." Exhibit 2 at 10.

Ms. Salerno had a follow-up appointment with Dr. Sweeney on July 25, 2014. Since the date of the surgery, Ms. Salerno reported that she been "been doing really well" and had not experienced any significant headaches. Exhibit 11 at 23. She noted that her post-operative headaches were "very brief" and frontal, with a slight throb. Id. Dr. Sweeney noted that Ms. Salerno had discontinued her migraine medications prior to the surgery and had not re-started them. Id. In her records, Dr. Sweeney questioned whether the anesthesia or the removal of the ovarian mass alleviated Ms. Salerno's headaches. Id. Dr. Sweeney instructed Ms. Salerno to follow up on an as-needed basis. Id.

Ms. Salerno similarly reported post-operative improvement of her headaches during an appointment with Dr. Fryer on August 20, 2014. Exhibit 1 at 14. On that date, Ms. Salerno complained of only occasional ice pick headaches that she treated with Advil or Aleve. Id. Dr. Fryer indicated that he would next see Ms. Salerno in approximately four months. Id. at 15.

At her next appointment with Dr. Fryer, on December 1, 2014, Ms. Salerno stated that, although her headaches had improved post-surgery, they had returned "a few weeks ago." Id. at 8. She indicated that her headaches were worse "just before she gets her period." Id. Dr. Fryer assessed Ms. Salerno with "headache, migraine, intractable" and prescribed rizatriptan and amitriptyline. Id. at 9.

Approximately seven months later, on June 17, 2015, Petitioner had an appointment with Dr. Tsay, her endocrinologist. Exhibit 12 at 7. Ms. Salerno reported significant fatigue but stated that her previous migraines were improved. Id. Ms. Salerno denied taking any medications. Id. Dr. Tsay opined that Ms. Salerno's elevated total/free testosterone levels were consistent with PCOS. Id. at 8.

On November 17, 2015, Ms. Salerno underwent an annual physical with Dr. Toll-Griffin. Exhibit 4 at 6. She reported that her headaches had returned but indicated they were not as severe as before. Id. Ms. Salerno stated that she

believed her headaches had started shortly after she received the flu and HPV vaccinations. Id. The next month, on December 9, 2015, Ms. Salerno again complained of ongoing headaches during an appointment with Dr. Toll-Griffin. Id.

At an appointment with Dr. Toll-Griffin the following year, on April 29, 2016, Ms. Salerno noted that she had recently learned that two family members were diagnosed with lupus. Id. at 3. At that time, Ms. Salerno had nonspecific complaints, including headaches and fatigue. Id. Ms. Salerno claimed that she frequently became sick after immunizations. Id. Dr. Toll-Griffin ordered additional lab studies. Ms. Salerno's lab results from May 2016 were generally normal. Id. at 37-40. Her vitamin D level was 27.6. Id. at 40.

Ms. Salerno's more recent medical records have been reviewed but are not relevant in determining her claim for entitlement. See Pet'r's Br. at 3-21 (containing little, if any, discussion of medical records after 2014); Resp't's Br. at 8 (ending recitation of facts in 2016).

III. Standards for Adjudication

Petitioners are required to establish their cases by a preponderance of the evidence. 42 U.S.C. § 300aa–13(1)(a). The preponderance of the evidence standard requires a "trier of fact to believe that the existence of a fact is more probable than its nonexistence before [he] may find in favor of the party who has the burden to persuade the judge of the fact's existence." Moberly v. Sec'y of Health & Human Servs., 592 F.3d 1315, 1322 n.2 (Fed. Cir. 2010) (citations omitted).

The process for finding facts in the Vaccine Program begins with analyzing the medical records, which are required to be filed with the petition. 42 U.S.C. § 300aa–11(c)(2). Medical records that are created contemporaneously with the events they describe are presumed to be accurate. Cucuras v. Sec'y of Health & Human Servs., 993 F.2d 1525, 1528 (Fed. Cir. 1993).

IV. Analysis

Ms. Salerno alleges two alternative claims. It appears her primary claim is that the flu and HPV vaccinations caused her to develop a chronic migraine three days following the vaccinations, which lasted for approximately nine months. In the alternative, Ms. Salerno alleges that her post-vaccination migraine constituted a significant aggravation of the episodic migraines and/or headaches that she experienced prior to the vaccinations.

The elements of a significant aggravation claim include the elements of an initial onset claim with some minor modifications in wording. The elements are set forth in Loving. Loving v. Sec'y of Health & Human Servs., 86 Fed. Cl. 135, 144 (2009); see also W.C. v. Sec'y of Health & Human Servs., 704 F.3d 1352, 1357 (Fed. Cir. 2013) (holding that the Loving test "provides the correct framework for evaluating off-table significant aggravation claims"). Loving sets out six elements that a petitioner must prove:

> (1) the person's condition prior to administration of the vaccine, (2) the person's current condition (or the condition following the vaccination if that is also pertinent), (3) whether the person's current condition constitutes a "significant aggravation" of the person's condition prior to vaccination, (4) a medical theory causally connecting such a significantly worsened condition to the vaccination, (5) a logical sequence of cause and effect showing that the vaccination was the reason for the significant aggravation, and (6) a showing of a proximate temporal relationship between the vaccination and the significant aggravation.

Loving, 86 Fed. Cl. at 144. The undersigned will first evaluate the initial three elements of Ms. Salerno's significant aggravation claim. The final three elements are derived from Althen v. Sec'y of Health & Human Servs., 418 F.3d 1274, 1278 (Fed. Cir. 2005), and apply equally to the analysis under both claims.

A. Condition Before Vaccination

As noted in the fact section above, Ms. Salerno received treatment for headaches over multiple years prior to the November 12, 2013 vaccinations. The parties and their experts do not dispute that Ms. Salerno suffered from headaches and/or migraines during this period.

B. Condition After Vaccination

The parties and their experts also agree that Ms. Salerno experienced a migraine following the November 12, 2013 vaccinations. Ms. Salerno's relevant post-vaccination medical history is detailed in the fact section above.

C. Significant Aggravation

Congress defined significant aggravation as "any change for the worse in a preexisting condition which results in markedly greater disability, pain, or illness accompanied by substantial deterioration of health." 42 U.S.C. § 300aa-33(4).

In his brief, the Secretary argues that it is not clear that Ms. Salerno's post-vaccination migraines constituted a dramatic worsening of her preexisting headaches and/or migraines. Resp't's Br. at 14. The Secretary notes that, although Ms. Salerno's head pain appeared to be worse following the vaccinations, her migraine was not accompanied by several of the symptoms she experienced prior to November 12, 2013, including nausea, vomiting, vision loss, and dizziness upon standing. Id. Referencing Ms. Salerno's pre-vaccination records from March 2012, the Secretary notes that Ms. Salerno had indicated that she felt like her head "was going to explode." Id. The Secretary points out that Ms. Salerno used a similar metaphor to describe her migraine during the post-vaccination period. Id.

The Secretary also cites the supplemental report from Dr. Bingham, his expert, to assert that Ms. Salerno's affidavit and school absences should not be relied upon to determine the severity of her head pain. Id. In his report, Dr. Bingham explained that one's ability to cope or to adapt to pain is variable and can be affected by multiple outside factors. Exhibit N at 1. Thus, according to Dr. Bingham, the capacity for functioning "does not amount to a simple index of the severity of the underlying disease process known as migraine." Id. at 2.

Ms. Salerno, for her part, takes issue with the Secretary's discounting of the non-medical evidence presented in this case. Ms. Salerno argues that a consideration of one's day-to-day activities is important in the evaluation of migraines, a condition aggravated by physical activity. Pet'r's Br. at 6. Ms. Salerno further asserts that her recollection of her condition during the pre- and post-vaccination periods is consistent with the medical records. Id. at 6-9. Addressing Dr. Bingham's supplemental report, Ms. Salerno specifically notes that her school absences alone do not establish that her headaches were worse; rather, the entire record—including her school records, Section 504 Individualized Accommodation Plan, medical records, and affidavits—indicates her school absences were necessitated by the severity of her migraines. Id. at 6.

Regarding the medical records, Ms. Salerno argues that her post-vaccination course of treatment establishes that her chronic migraine was of a greater intensity, frequency and severity; required a higher level of care; and was refractory to migraine therapy. Pet'r's Br. at 15-16; Pet'r's Reply at 10. To illustrate, she notes

that her post-vaccination headaches were daily, occurred throughout the head, required two hospitalizations, and were accompanied by photophobia, phonophobia, as well as other symptoms. Pet'r's Br. at 15-16. Ms. Salerno further states that her chronic migraine "did not respond to nortriptyline or other medications." Id. at 16.

The undersigned has considered the parties' arguments and finds the evidence as to significant aggravation to be mixed. As an initial matter, the undersigned agrees with Ms. Salerno that her non-medical records should be considered and weighed in determining the severity of her post-vaccination migraine. The Secretary and Dr. Bingham have argued otherwise; however, they have not presented persuasive evidence to establish that migraines should be analyzed in a different manner than other vaccine-related injuries.

Even so, comparing Ms. Salerno's condition prior to November 12, 2013 with her post-vaccination migraine is difficult as the evidence is mixed. For example, in the periods before *and* after her vaccinations, Ms. Salerno reported episodes of daily headaches that lasted for months. Although Ms. Salerno reported new headache-associated symptoms (e.g., photophobia) following her vaccinations, her migraine was not accompanied by multiple symptoms that she experienced *prior to* November 12, 2013, including nausea and vomiting. With regard to the location of her migraine, Ms. Salerno has emphasized that her post-vaccination headaches occurred throughout her entire head. However, at an appointment on March 1, 2013—approximately eight months prior to her vaccinations—Ms. Salerno reported that her headaches were increasing in frequency, waking her up at night, and *involving her whole head*. Id. at 11. Ms. Salerno further noted that it felt like her head was "going to explode." Id. In her briefs, Ms. Salerno otherwise claims that her condition was refractory to migraine therapy. Yet, as described in the fact section above, there are multiple notations in Ms. Salerno's records stating her symptoms improved with medication and other treatment modalities, including a bilateral occipital nerve block.

The undersigned has weighed Ms. Salerno's hospitalizations, affidavits, Section 504 Individualized Accommodation, school absences, and March 7, 2018 interview with Dr. Gutstein. This evidence suggests some impairment. But, whether the record considered as a whole preponderates in favor of finding significant aggravation is not clear. Nevertheless, for the sake of argument, the undersigned will assume, that Ms. Salerno has presented preponderant evidence that her migraine was markedly worse sometime after the vaccination. Thus, the remaining three Althen/Loving prongs are considered.

D. Medical Theory Causally Connecting Vaccination and Injury

Through Dr. Gutstein, Ms. Salerno advances ASIA.[6] Specifically, the theory proposes that the aluminum adjuvant in the flu and HPV vaccinations caused proliferation of immune cells, including T-cells, B-cells, and mass cells, and these cells cross-reacted to produce Calcitonin Gene-related Peptide ("CGRP"), which in turn produced Ms. Salerno's migraine. Pet'r's Br. at 39.

This theory does not constitute a persuasive medical theory for two reasons. First, as a general flaw, ASIA is not a reliable theory connecting vaccination to any injury. Second, and more specifically, Ms. Salerno has not explained why an aluminum adjuvant would produce (or aggravate) headaches (or migraines).

1. ASIA is an unreliable theory.

As described above, the undersigned notified petitioner during a status conference on April 11, 2018, that the ASIA theory has not been successful in the Vaccine Program. To reiterate here, the ASIA theory has been uniformly rejected as unreliable and unsupported in prior cases. See D'Angiolini v. Sec'y of Health & Human Servs., 122 Fed. Cl. 86, 102 (2015) (upholding special master's "determin[ation] that ASIA does not provide[] a biologically plausible theory for recovery"), aff'd, 645 Fed. App'x 1002 (Fed. Cir. 2016); Suliman v. Sec'y of Health & Human Servs., No. 13-993V, 2018 WL 6803697, at *27 (Fed. Cl. Spec. Mstr. Nov. 27, 2018) ("No special masters have ever found ASIA or ASIA-like theories to be persuasive") (citing cases); Garner v. Sec'y of Health & Human Servs., No. 15-063V, 2017 WL 1713184, at *8 (Fed. Cl. Spec. Mstr. Mar. 24, 2017) (observing that the ASIA theory "is, at a minimum, incomplete and preliminary—and therefore unreliable from an evidentiary standpoint"); Johnson v. Sec'y of Health & Human Servs., No. 10-578V, 2016 WL 4917548, at *7-9 (Fed. Cl. Spec. Mstr. Aug. 18, 2016) (rejecting Dr. Shoenfeld's expansive medical theory that "any adjuvant [is] capable of causing any autoimmune disease," finding it "overbroad, generalized, and vague, to the point that it could apply to virtually everyone in the world who received a vaccine containing an adjuvant and then at some time in their lives developed an autoimmune disease"); Rowan v. Sec'y of Health & Human Servs., No. 10-272V, 2014 WL 7465661, at *12 (Fed. Cl. Spec.

[6] Ms. Salerno's initial brief indicated that Dr. Gutstein had offered "two medical theories." See Order, issued Dec. 12, 2019. One theory was ASIA; however, the other theory was unclear. Id. at 1-2. Ms. Salerno clarified in her reply brief that Dr. Gutstein had offered ASIA as the only medical theory in this case. Pet'r's Reply at 1.

Mstr. Dec. 8, 2014) (rejecting the ASIA theory because it "is not a proven theory" and no "persuasive or reliable evidence" supports it), mot. for rev. denied, 2015 WL 3562409 (Fed. Cl. 2015).

Ms. Salerno attempts to rehabilitate the ASIA theory by citing to medical literature, including articles published after the issuance of the decisions above. Pet'r's Br. at 37-41; Pet'r's Reply at 5. Several of the articles provided are authored or co-authored by Dr. Yehuda Shoenfeld, an initial proponent of the ASIA theory. Even where Dr. Shoenfeld is not listed as an author, many of the articles share the same co-authors or were published in journals on which Dr. Shoenfeld is an editor or founder. The limited roster of apparent ASIA proponents suggests that it is not currently a generally accepted medical condition—a point raised in prior ASIA decisions. Of note, Ms. Salerno's expert, Dr. Gutstein, stated that he was "unaware of any epidemiological studies that exist to date to support [the ASIA theory]." Exhibit 17 at 23.

By contrast, the Secretary has cited multiple articles that persuasively call into question the legitimacy of the ASIA theory. Among these is an article from Australia that discusses an epidemiological study of patients undergoing allergen-specific immunotherapy. These patients received 100 to 500 times more injected aluminum over three to five years compared to recipients of the hepatitis B and HPV vaccines. Yet, the patients receiving the aluminum-containing allergen immunotherapy preparations were shown to have a lower incidence of autoimmune disease. Exhibit O (Ameratunga, et al., *Evidence Refuting the Existence of Autoimmune/Autoinflammatory Syndrome Induced by Adjuvants (ASIA)*, 5 J. Allergy Clin. Immunol. Pract. 1551 (2017)) at 1, 3-4. The results of this epidemiological study seem to offer the opposite outcome that would have been predicted under the ASIA theory.

Accordingly, Ms. Salerno has not demonstrated that ASIA is a reliable theory.

2. Ms. Salerno has not established how vaccinations can cause (or aggravate) headaches.

Ms. Salerno's case is grounded in the unpersuasive ASIA theory. Nevertheless, Ms. Salerno has also presented evidence to explain how an adjuvant would produce (or aggravate) headaches (or migraines). See Faup v. Sec'y of Health & Human Servs., No. 12-87V, 2019 WL 8357177 (Fed. Cl. Dec. 27, 2019) (addressing ASIA and more specific theory connecting vaccination to systemic juvenile idiopathic arthritis).

To establish the reliability of her theory, Ms. Salerno relies upon Dr. Gutstein in addition to other medical evidence, including an epidemiologic study, case reports about headaches after vaccinations, package inserts, and a study on mice. The latter materials underlie Dr. Gutstein's theory that the flu and HPV vaccinations cause an increase in CGRP that contributes to migraines. Ms. Salerno's evidence will be discussed in turn.

a) Epidemiology

Initially, in both of her briefs, Ms. Salerno discusses Schurink-van't Klooster, et al., *Examining a possible association between human papilloma virus (HPV) vaccination and migraine: results of a cohort study in the Netherlands*, 174 Eur. J. Pediatr. 641 (2015), an article submitted by Dr. Bingham, the Secretary's expert, as exhibit J. Pet'r's Br. at 35-37; Pet'r's Reply at 8. Ms. Salerno argues that this article actually supports her theory. A detailed discussion of the article is therefore appropriate.

In the Schurink-van't Klooster article, the authors noted that migraines have been reported to a national passive safety surveillance system in the Netherlands since the introduction of the HPV vaccine. Exhibit J at 642. In the article's introduction, the authors stated "no plausible pathophysiological mechanism is known to explain how migraine may be caused by HPV vaccination. Vaccination may act as a trigger for migraine, i.e. provocative factor for an attack. Although, according to many experts, the value of triggers is overestimated." Id.

Whether migraines were being reported after vaccination more frequently than expected was difficult to determine because the background incident rate for migraines was lacking. Id. To assess whether there was an association between the HPV vaccination and migraine, the authors analyzed data from a medical database containing records from approximately nine percent of the Dutch population. Id. at 642-43. The authors compared (1) incidences of post-vaccination migraine from 2009 and 2010 with pre-vaccination incidences in 2008; (2) in a cohort, incidence rates of migraine in vaccinated and unvaccinated girls; and (3) in a self-controlled case series analysis, the relative incidence of migraine in potentially high-risk periods with non-high-risk periods. Id. at 641-42.

The results showed that among 12- to 16-year old girls, the incidence rate of migraines was slightly higher in the post-vaccination period (2009-2010) compared to the pre-vaccination period (2008). Id. at 645. In the cohort analysis, which included a total of 2005 girls, the authors noted that 22 girls had incident migraines in 2009-2010, of which 11 were vaccinated and 11 were unvaccinated. Id. The

authors found that the incidence rate ratios for migraines in monthly periods following the first HPV dose compared to migraine in unvaccinated girls, or migraine occurring in the period before vaccination, were not statistically significant. Id. The authors concluded, "using different methods of analysis, no statistically significant association between HPV vaccination and incident migraines was found." Id. at 648.

Ms. Salerno argues that Dr. Bingham erred by focusing on the article's conclusions while ignoring other relevant statements and findings that support her theory. Pet'r's Br. at 35-37. She specifically cites the authors' comment that "[v]accination may act as a trigger for migraine, i.e., provocative factor for an attack." Exhibit J at 642. This proposition, however, is not accompanied by any citation to authority in the article. Additionally, the paragraph in which the comment appears otherwise contains statements that do not clearly support Ms. Salerno's position. Indeed, the authors noted that "no plausible pathophysiological mechanism is known to explain how migraine may be caused by HPV vaccination," and that "according to many experts, the value of triggers is overestimated." Id.

b) Case reports and package insert

Ms. Salerno also highlights portions of the Schurink-van't Klooster article noting that headaches and migraines have been reported to occur following administration of the HPV vaccine. Exhibit J at 642. Yet, reports of cases, even when collected into a case series, are not strong evidence of causation. The same is true of the HPV vaccine package inserts cited by Ms. Salerno in support of her theory. See Bender v. Sec'y of Health & Human Servs., No. 11-693V, 2018 WL 3679637, at *31 (Fed. Cl. Spec. Mstr. July 2, 2018) (noting that "vaccine package inserts do not constitute causation evidence meriting significant weight"), mot. for rev. denied, 141 Fed. Cl. 262 (2019); Werderitsh v. Sec'y of Health & Human Servs., No. 99–319V, 2005 WL 3320041, at *8 (Fed. Cl. Spec. Mstr. Nov. 10, 2005) (quoting 21 C.F.R. § 600.80(l) as stating that "[a] report or information submitted by a licensed manufacturer . . . does not necessarily reflect a conclusion by the licensed manufacturer or FDA that the report or information constitutes an admission that the biological product caused or contributed to an adverse effect"). Even if one were to accept that the flu or HPV vaccinations caused transient headaches, Ms. Salerno has not adequately explained how temporary headaches are analogous to migraines lasting approximately nine months.

c) Mouse Study

In support of her theory, Ms. Salerno also cites Inbar, et al., *Behavioral abnormalities in female mice following administration of aluminum adjuvants and the human papillomavirus (HPV) vaccine Gardasil*, 65 Immunol. Res. 136-49 (2016), which was co-authored by Dr. Shoenfeld. Pet'r's Br. at 39; Pet'r's Reply at 5-6. Ms. Salerno notes that the authors, following an experiment conducted on female mice, demonstrated that Gardasil, via its aluminum adjuvant and HPV antigens, had "the ability to trigger neuroinflammation and autoimmune reactions, further leading to behavioral changes." Pet'r's Br. at 39; Pet'r's Reply at 5. As indicated above, Ms. Salerno was advised on December 12, 2019, that the journal that originally published the Inbar article had retracted it due to "serious concerns" regarding its scientific soundness. See Order, issued Dec. 12, 2019; Court Exhibit 1001 at 3. The article was subsequently published in Immunologic Research,[7] a journal on which Dr. Shoenfeld is an editor. Even ignoring the retraction, however, Ms. Salerno has not adequately explained how the purported results of this study (e.g., post-vaccination autoimmune reactions and behavioral changes in mice) can be specifically applied to post-vaccination migraine in humans. The Secretary, on the other hand, has submitted an article that persuasively details the general methodological and analytical flaws of animal models supporting the existence of ASIA. See exhibit D (Ameratunga, et al., *Perspective: Scientific and Ethical Concerns Pertaining to Animal Models of Autoimmune/ Autoinflammatory Syndrome Induced by Adjuvants (ASIA)*, 17 Autoimmunity Reviews 435-39 (2018)).

d) CGRP Theory

Regarding the specific mechanism of her injury—i.e., immune dysregulation leading to migraines through CGRP—Ms. Salerno was also advised at an earlier date that the CGRP theory had played a central role in McGuire v. Sec'y of Health & Human Servs., No. 10-609V, 2015 WL 6150598 (Fed. Cl. Spec. Mstr. Sept. 18, 2015), in which the petitioner was denied compensation. See Order, issued Apr. 11, 2018. Although Ms. Salerno attempts to distinguish McGuire, see Pet'r's Reply at 6-7, those efforts are not persuasive.

Other Vaccine Program petitioners have argued that a vaccination led the body to produce a substance as part of the normal expected immune response and

[7] In her reply brief, Ms. Salerno incorrectly identifies the journal as the "Journal of Immunology Research." Pet'r's Reply at 6.

this substance, then, had a deleterious effect. Notable examples are theories about the post-vaccination expression of proinflammatory cytokines. However, several cases have found these theories unpersuasive or deficient. See, e.g., Dean v. Sec'y of Health & Human Servs., No. 13-808V, 2017 WL 2926605 (Fed. Cl. Spec. Mstr. June 9, 2017) (ruling on the record that the "cytokine storm" theory was not a persuasive causation theory explaining petitioner's neurological deficits following the DTaP and Hib vaccines) mot. for rev. den'd, slip op. (Fed. Cl. Sept. 26, 2017); Wolf v. Sec'y of Health & Human Servs., No. 14-342V, 2016 WL 6518581, at *13 (Fed. Cl. Spec. Mstr. Sept. 15, 2016) (dismissing claim on the record after determining that the proinflammatory cytokine expression theory was insufficiently reliable to explain how vaccination caused petitioner's developmental impairments); Godfrey v. Sec'y of Health & Human Servs., No. 10-565V, 2015 WL 10710961, at *10-14 (Fed. Cl. Spec. Mstr. Oct. 27, 2015) (insufficient reliable scientific evidence supported proposition that cytokine upregulation induced by HPV vaccine was pathogenic enough to cause juvenile ankylosing spondylitis), mot. for review den'd, slip op. (Fed. Cl. Apr. 29, 2016). Ms. Salerno's CGRP theory seems to be a variation on this (unpersuasive) theme.

For these reasons, Ms. Salerno has not met her burden of presenting a persuasive medical theory causally connecting the flu and HPV vaccinations to the development and/or worsening of her chronic migraine. See Rolshoven v. Sec'y of Health & Human Servs., No. 14-439V, 2018 WL 1124737, at *20-21 (Fed. Cl. Spec. Mstr. Jan. 11, 2018) (rejecting theory attempting to explain how alum can cause headaches); Rowan, 2014 WL 7465661, at *12 (denying entitlement to petitioner who claimed the aluminum adjuvant in the HPV vaccine caused her headaches, migraines, and chronic fatigue syndrome).

E. Logical Sequence of Cause and Effect

Given that Ms. Salerno has not established a valid and reliable theory, the undersigned need not discuss her showings under the following two prongs. See Caves v. Sec'y of Health & Human Servs., 100 Fed. Cl. 119, 145 (2011). Nevertheless, for sake of completeness, these criteria will also be considered.

With respect to this prong, the Federal Circuit has instructed special masters to consider carefully the views of a treating doctor. Capizzano v. Sec'y of Health & Human Servs., 440 F.3d 1317, 1326 (Fed. Cir. 2006). Ms. Salerno has not identified any treating doctor who affirmatively linked the flu or HPV vaccinations as causal in the worsening of her symptoms. Ms. Salerno's pediatric neurologist, Dr. Fryer, commented on December 11, 2013, that the etiology of her headache was "multifactorial" and that it would be "hard to pin [her headache] on the

vaccinations versus her endocrine issues versus routine stress and dietary issues." Exhibit 1 at 44. In her brief, Ms. Salerno addresses this statement but asserts that Dr. Fryer never ruled out the vaccinations as causal. Pet'r's Br. at 50. Ms. Salerno claims that Dr. Fryer was therefore "of the opinion that vaccines have the ability to cause and/or trigger chronic migraines." Id. Dr. Fryer's statement, however, is equivocal and seems only to suggest that he thought there were multiple causes of Ms. Salerno's headaches.

The undersigned notes that Ms. Salerno has not otherwise provided evidence to connect the ASIA theory of causation to her specific injury beyond a close temporal relationship and the (possible) elimination of other potential causes. Ms. Salerno acknowledges that her levels of CGRP were not tested during the period at issue in this case. Pet'r's Reply at 11. Although Dr. Gutstein notes that Ms. Salerno's genetic disposition placed her at greater risk of suffering an autoimmune disorder caused by vaccines, the record in this case does not reflect any genetic testing. Exhibit 17 at 25.

Considered as a whole, the evidence presented is not sufficient to establish Ms. Salerno's burden under this prong. Moberly, 592 F.3d at 1323 (stating that "temporal association between a vaccination and a seizure, together with the absence of any other identified cause for the ultimate neurological injury" is evidence of causation but does not by itself compel a finding of causation); Althen, 418 F.3d at 1278 ("[N]either a mere showing of a proximate temporal relationship between vaccine and injury, nor a simplistic elimination of other potential causes of the injury suffices, without more, to meet the burden of showing actual causation." (emphasis added)).

F. Timing

The timing prong actually contains two parts. A petitioner must show the "timeframe for which it is medically acceptable to infer causation" and that the onset of the disease occurred in this period. Shapiro v. Sec'y of Health & Human Servs., 101 Fed. Cl. 532, 542-43 (2011), recons. denied after remand on other grounds, 105 Fed. Cl. 353 (2012), aff'd without op., 503 F. App'x 952 (Fed. Cir. 2013).

Presenting the medical theory for Ms. Salerno, Dr. Gutstein stated in his report that the aluminum adjuvant triggers an adaptive immune response that "usually takes a few days to weeks." Exhibit 17 at 24. Dr. Gutstein noted in his supplemental report that the three-day onset of Ms. Salerno's migraines was "an appropriate time frame within which you would expect such an autoimmune

reaction to occur." Exhibit 50 at 6. In the Order setting the deadlines for the parties' briefs, Ms. Salerno was instructed to more fully develop her proposed timing. See Order, issued Apr. 11, 2019.

In her July 5, 2019 brief, Ms. Salerno stated that Dr. Gutstein had offered an opinion that "the appropriate temporal association between vaccines and autoimmune injuries is a few days to one month following vaccination." Pet'r's Br. at 42. Ms. Salerno cited the section of Dr. Gutstein's report noting that the flu and HPV vaccines are "potent immune stimulants," the antibody response to the vaccine begins within days, and that, based on the Gardasil package insert, 99% of people vaccinated become immune within one month. Id.

The Secretary's expert, Dr. Bingham, declined in his initial report to provide a medically acceptable timeframe to infer causation because he did not find the ASIA theory to be valid. Exhibit A at 7. Similarly, in his brief, the Secretary asserted that it was impossible to determine how long after vaccination the onset, or significant aggravation, would be expected to occur without a reliable theory presented. Resp't's Br. at 22.

Any opinion regarding the appropriate temporal relationship (the first part of Althen prong 3) depends on having a "reputable theory as to how the vaccination could cause the injury." Langland v. Sec'y of Health & Human Servs., 109 Fed. Cl. 421, 443 (2013). Here, because ASIA is not a reputable theory, no interval is "appropriate." Thus, Ms. Salerno has failed to meet her burden with respect to prong 3.

G. Other Causes of Ms. Salerno's Alleged Injury

Finally, if Ms. Salerno had presented preponderant evidence on each of the Loving/Althen prongs, then the Secretary might rebut this showing by presenting that factors other than the vaccinations caused Ms. Salerno's headaches/migraines. See LaLonde v. Sec'y of Health & Human Servs., 746 F.3d 1334, 1340-41 (Fed. Cir. 2014). Through Dr. Bingham, the Secretary identified potential alternative etiologies, including obesity, seasonal change, polycystic ovarian syndrome, intercurrent infection, and low vitamin D levels. Given that Ms. Salerno has failed to meet her initial burden, consideration of these potential alternatives is unnecessary.

V. A Hearing is Not Necessary

While Ms. Salerno has requested a hearing, any oral testimony would not change the outcome of this case. The only theory Ms. Salerno has advanced--

ASIA--has been consistently rejected as unreliable and unpersuasive. Neither Dr. Gutstein's reports nor Ms. Salerno's briefs have presented any persuasive reason for departing from the series of cases.

VI. Conclusion

Ms. Salerno may genuinely believe that the flu and HPV vaccinations harmed her. However, preponderant evidence in the form of medical records or medical opinions do not support her claim. The Clerk's Office is instructed to enter judgment in accord with this decision unless a motion for review is filed.[8]

IT IS SO ORDERED.

s/Christian J. Moran
Christian J. Moran
Special Master

[8] Entry of judgment can be expedited by each party's filing of a notice renouncing the right to seek review. Vaccine Rule 11(a).